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U.S. ARMY CHEMICAL AND BIOLOGICAL DEFENSE COMMAND

ERDEC-TR-397

SAFETY CLIMATE SURVEY

William R. Cappuccio
George E. Collins, Jr.
Carol A. Eason

OPERATIONS DIRECTORATE

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Aberdeen Proving Ground, MD 21010-5423

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13. ABSTRACT (Maximum 200 words) The Safety Office currently uses accident rates to measure the effectiveness of the Safety and Health program at the U.S. Army Edgewood Research, Development and Engineering Center. The accident rate at the Center continues to be extremely low and does not provide an accurate picture of the program's effectiveness. Therefore, the Safety Office selected, distributed, and analyzed a Safety Climate Survey. The information gathered from the survey was used to select improvement areas, and these improvements will be implemented over the next year.				
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PREFACE

The work described in this report was authorized by the Operations Directorate. The work was started in August 1996 and completed in December 1996.

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SAFETY CLIMATE SURVEY

1. Introduction

During the period of August to October 1996, the Safety Office selected, distributed, and analyzed a Safety Climate Survey. The survey was developed by a safety and health professional and is being used by the Occupational Safety and Health Administration (OSHA) to evaluate corporate programs for admittance into the Voluntary Protection Program (VPP)¹. VPP is a means of encouraging voluntary corporate improvements and expanding safety and health to a worker protection system. Participants in VPP show employees and the local community that the company is seriously committed to developing and maintaining a high quality safety and health program.

The purpose of this survey was to receive an indication of how the work force perceives safety and health at the Edgewood Research, Development and Engineering Center (ERDEC). Characteristically, accident rates have been the yard stick for measuring safety and health at ERDEC. Fortunately the accident rate here is continually very low. Unfortunately this statistic does not provide enough information about the effectiveness of the safety and health program. The Safety Office requires a better means of evaluating the program. The ultimate goal of this survey instrument will be the ability to continually evaluate improvements to safety and health and to move the program toward a behavioral approach in which every employee is actively participating and accepting responsibility for their safety and health here at ERDEC.

2. Method

A simple random sample of ERDEC employee names (n=100) was generated from the e-mail data base². Fifteen names were removed from this list because the individuals were not government employees or they no longer were employed by ERDEC. The survey (appendix) was hand delivered to the select individuals by the Safety Office. The employees had the choice of mailing the survey back or having the individual responsible for delivery, return and pick it up. At the time of delivery and pick up the Safety Office answered any questions which arose.

Content validity of the survey was examined by having a group of ERDEC safety engineers and specialists review the survey questions and responses for appropriateness to this facility. The reliability of the survey was examined by selecting a small group of

¹ Dawson, L. H., "Basic OSHA-Proofing: Implementing the OSHA Safety and Health Program Management Guidelines", *Professional Safety*, pp30-35, October 1995, (Unclassified Guidelines).

² Fink, A., *The Survey Kit*, Sage Publications, Thousand Oaks, CA, 1995.

individuals (n=5) and performing a test-retest examination (data not shown) on the survey instrument.

3. Results

The survey was completed and returned by 65 employees of the ERDEC work force. This is a survey response rate of 76 percent. A total of 60 returned surveys was required to be confident that the true population mean was being detected. The high level of response by the work force indicates the importance employees place on safety and health here at ERDEC.

The survey is broken down into four sections: Management Leadership and Employee Participation (Figure 1), Workplace Analysis (Figure 2), Hazard Prevention and Control (Figure 3), and Safety and Health Training (Figure 4). Each section contains a group of questions relevant to the topic. A mean for each question was calculated using the data received from all respondents. If a question was skipped, the information was analyzed as if no data was present.

The results are interpreted using the following chart:

- 0 - No score is awarded where little or no positive effort can be found in safety and health.
- 1 - Basic or mechanical compliance in safety and health.
- 2 - Some positive safety and health behavior is generally apparent.
- 3 - Most people are aware of safety and health and adhere to the expectations.
- 4 - Work force is actively participating and empowered in safety and health.

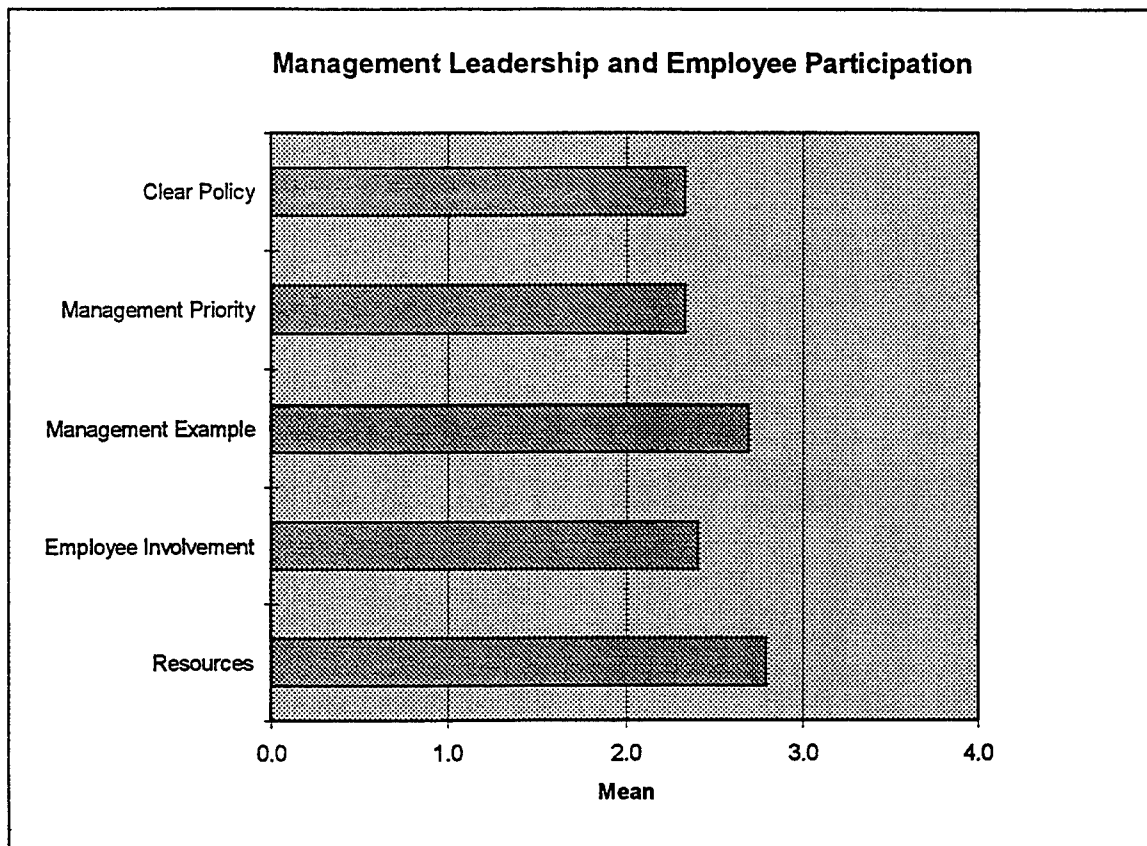


Figure 1. Management Leadership and Employee Participation

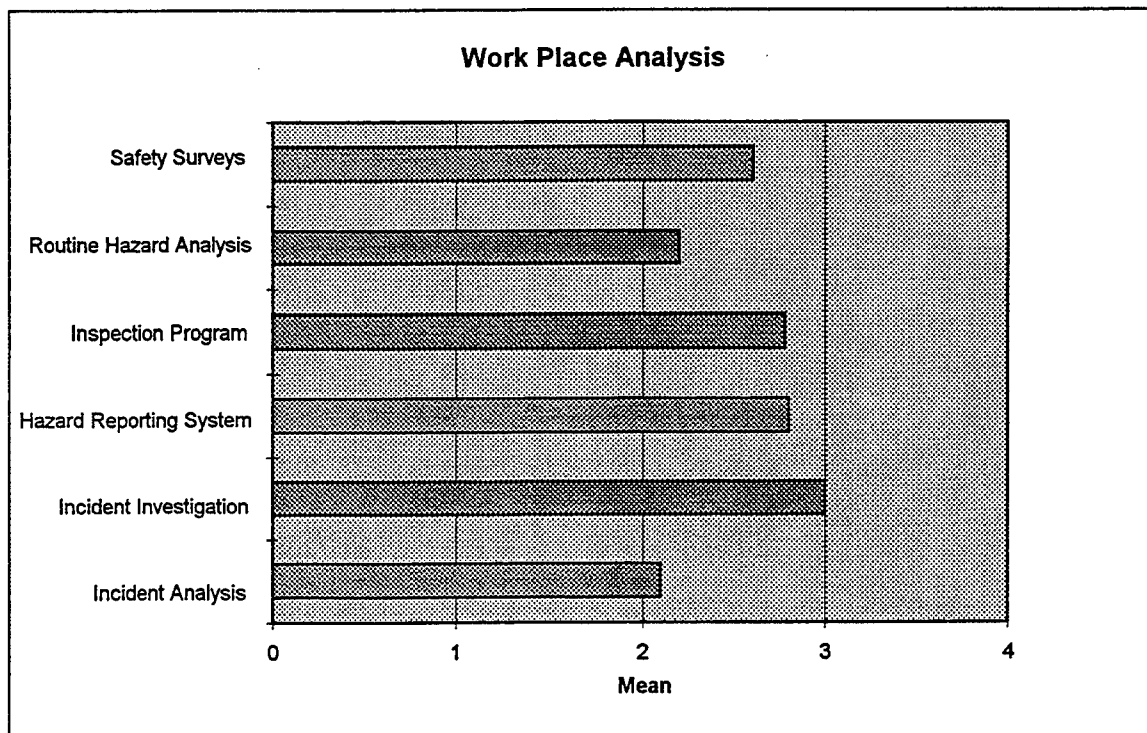


Figure 2. Workplace Analysis

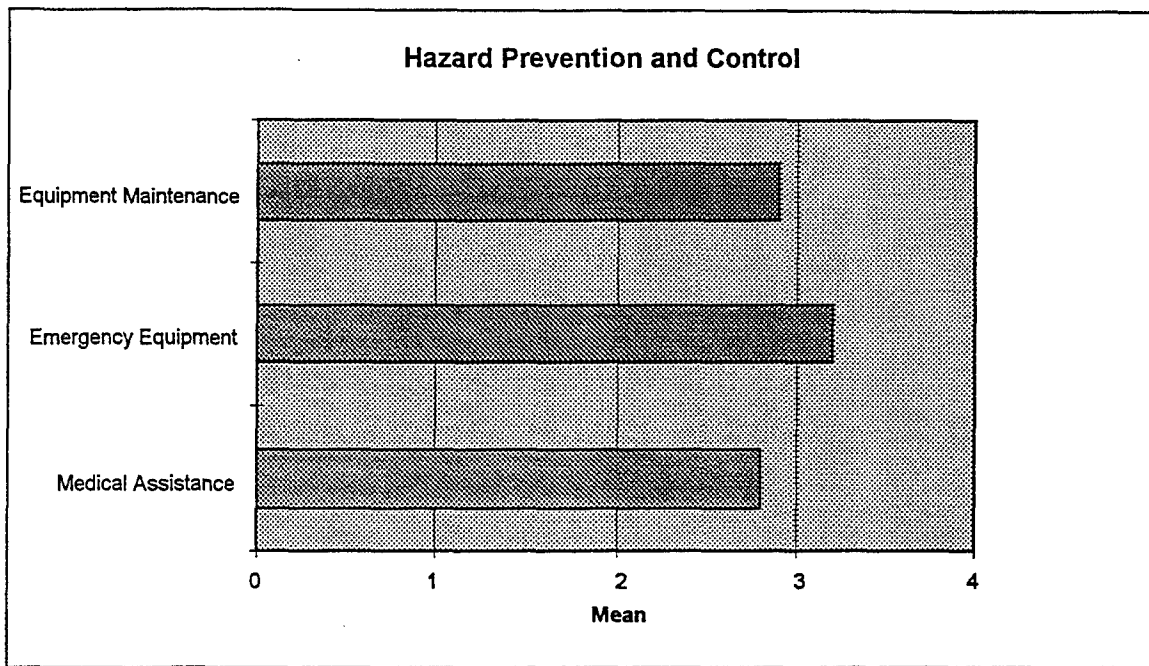


Figure 3. Hazard Prevention and Control

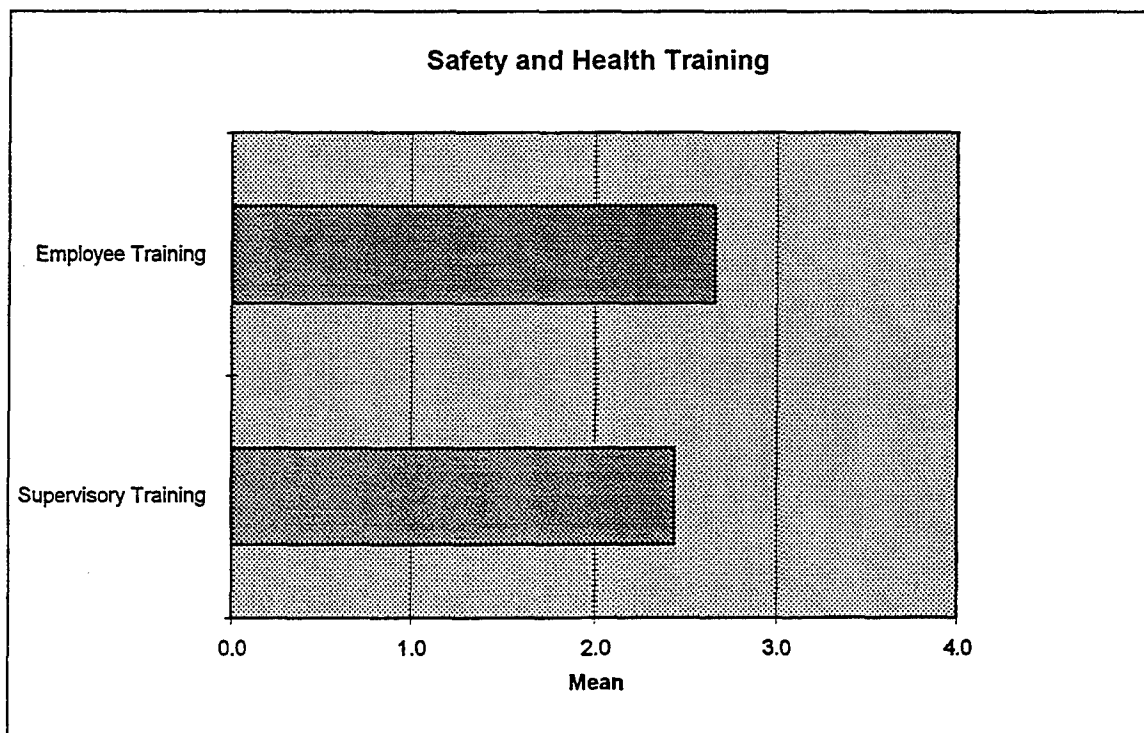


Figure 4. Safety and Health Training

A total score for the survey was calculated by taking the mean of each question calculating the average and converting to a scale of one hundred. The score for the ERDEC work force is 65. The value is interpreted using the following chart:

0-24	Elements of an effective safety plan do not exist.
25-49	Paperwork exists and there is some program understanding.
50-74	Safety and Health is fairly well established and supported in the work place.
75+	A facility where everyone plays a positive role in safety and health.

4. Conclusion

As the data indicates, the safety and health program is well established and supported by both management and the employees here at ERDEC, although, there is still a large population of employees that have little or no interaction with the Safety Office. This information became apparent in speaking with administrative support employees selected to take the survey.

This survey was selected and conducted to develop a sense of employee attitude toward safety and health here at ERDEC. Responses from at least 60 employees was required to be 95% confident that the true population mean was being detected. This survey could be used in the future to measure changes in safety and health after intervention if a much larger sample of the work force is selected. To detect small changes in population means over time would require a much larger sample size (n= approximately 300) based on the current number of employees.

Over the next year the Safety Office will make improvements in the following areas by:

- Management Leadership and Employee Participation
 1. Sharing the results of the survey with management and employees.
 2. Including the discussion of risk management issues in staff meetings.
- Workplace Analysis

1. Preparing and presenting risk awareness day.
2. Improvement in the process of SOP / Hazard analysis preparation.

- Safety and Health Training

1. Conduct multimedia and LAN based training for the work force.

The goal of the Safety Office is to move the safety and health program to the highest level in which everyone is empowered to play a positive role in there own safety and health.

Appendix

Safety and Health Opinion Survey

Please circle appropriate response: Scientist/Engineer Manager/Team leader
 Technician Support personnel Other _____

Safety and health needs to be a key element of operations at our installation. To help us know how we're doing, what improvements we need to make, and how far we have to go, we'd like to have you circle the level you think we're at in each of the following areas.

Thanks for your help!

I. Management Leadership and Employee Participation

A. Clear worksite safety and health policy

1. (4) Work force can explain, and fully embraces, S & H policy
- (3) Majority of personnel can explain policy
- (2) Some personnel can explain policy
- (1) Management can provide or state policy
- (0) There is no apparent policy

B. Management leadership and example

2. (4) All personnel can give examples of management's active commitment to safety and health
 - (3) Majority personnel can give examples of management's active commitment to safety and health
 - (2) Some personnel can give examples of management's active commitment to safety and health
 - (1) Some evidence exists that management is committed to safety and health
 - (0) Safety and health does not appear to be a management value or significant concern
3. (4) Personnel report management always follows the rules and addresses the safety behavior of others
 - (3) Management follows the rules and usually addresses the safety behavior of others
 - (2) Management follows the rules and occasionally addresses the safety behavior of others
 - (1) Management generally appears to follow basic safety and health rules
 - (0) Management does not appear to follow the basic safety and health rules set for others

C. Employee involvement

4. (4) All personnel have ownership of safety and health and can describe their active roles
- (3) Majority of personnel feel they have a positive impact on identifying and resolving S&H issues
- (2) Some personnel feel they have a positive impact on identifying and resolving S&H issues
- (1) Employees frequently feel that their safety and health input will be considered by supervision
- (0) Employee involvement in safety and health issues is not encouraged or rewarded

D. Resources for safety and health

5. (4) All personnel believe they have the necessary resources to meet their responsibilities
- (3) Majority of personnel believe they have the necessary resources to do their job

- (2) Resources are spelled out for all; but there may be a reluctance to use them
- (1) Resources exist, but most appear to be out of the control of the employee
- (0) Personnel do not have adequate authority and resources to perform assigned responsibilities

II. Workplace Analysis

A. Hazard identification (safety survey)

- 6. (4) In addition to corrective action, regular safety surveys result in updated hazard inventories
- (3) Comprehensive safety surveys are conducted periodically and drive appropriate corrective action
- (2) Comprehensive safety surveys are conducted; but updates and corrective action sometimes lags
- (1) Safety or health professionals survey in response to accidents, complaints, or compliance activity
- (0) There is no evidence of any comprehensive hazard survey having been conducted

B. Routine hazard analysis

- 7. (4) Employees have had input to the hazard analysis for their jobs
- (3) A current hazard analysis exists for all jobs, processes, or phases and is understood by all employees
- (2) A current hazard analysis exists for all jobs, processes, or phases and is understood by many employees
- (1) A hazard analysis program exists; but few are aware of results
- (0) There is no routine hazard analysis system in place at this facility

C. Hazard identification (inspection)

- 8. (4) Well trained employees at all levels conduct frequent and varied inspections, hazards of any kind are rare
- (3) Inspection are conducted by trained personnel and all items are corrected, repeat hazards seldom found
- (2) Inspection are conducted by trained personnel, most items corrected, but some hazards still in evidence
- (1) An inspection program exists; but coverage and corrective action is not complete; hazards are in evidence
- (0) There is no routine inspection program at this facility; many hazards can be found

D. Hazard reporting system

- 9. (4) Employees feel comfortable identifying and self correcting hazards
- (3) A comprehensive system for gathering hazard information exists; is positive, rewarding and effective
- (2) A system exists for hazard reporting; employees feel they can use it; but it may be slow to respond
- (1) A system exists for hazard reporting; but employees may find it unresponsive or be unclear on its use
- (0) No formal hazard reporting system exists and/or employees do not appear comfortable reporting hazards

E. Accident/incident investigation

- 10. (4) All loss-producing incidents and "near misses" are investigated for root cause with effective prevention
- (3) All incidents are investigated and effective prevention is implemented
- (2) Incidents generally investigated; cause identification/correction maybe inadequate

- (1) Some investigation of incidents takes place, but root cause is seldom identified, correction is spotty
- (0) Injuries are either not investigated or investigation is limited to report writing required for compliance

F. Injury/illness analysis

- 11. (4) All employees are fully aware of incident trends, causes, and means of prevention
 - (3) Trends fully analyzed and displayed, common causes communicated, management ensures prevention
 - (2) Data is centrally collected and analyzed; common causes communicated to concerned supervisors
 - (1) Data is centrally collected and analyzed; but not widely communicated for prevention
 - (0) Little or no effort is made to analyze data for trends, causes, and prevention

III. Hazard Prevention and Control

A. Awareness of facility/equipment maintenance

- 12. (4) Operators are trained to recognize maintenance needs and perform/order maintenance on schedule
 - (3) An effective preventive maintenance schedule is in place and applicable to all equipment
 - (2) A preventive maintenance schedule is in place and is usually followed except for higher priorities
 - (1) A preventive maintenance schedule is in place; but is often allowed to slide
 - (0) There is little or no attention paid to preventive maintenance; break-down maintenance is the rule

B. Emergency equipment

- 13. (4) Facility is fully equipped for emergencies, all systems and equipment in place and regularly tested, all personnel know how to use equipment and communicate during emergencies
 - (3) Well equipped with appropriate emergency phones and directions, most people know what to do
 - (2) Emergency phones, directions, and equipment in place; but only emergency teams know what to do
 - (1) Emergency phones, directions, and equipment in place; but employees show little awareness
 - (0) There is little evidence of an effective effort at providing emergency equipment and information

C. Medical program (emergency care)

- 14. (4) Personnel fully trained in emergency medicine are always available on-site
 - (3) Personnel with basic first aid skills are always available on-site
 - (2) Personnel with basic first aid skills are usually available with community assistance near-by
 - (1) Either on-site or near-by community aid is always available on every shift
 - (0) Neither on-site nor community aid can be ensured at all times

IV. Safety and Health Training

A. Employees learn hazards, and how to protect themselves and others

- 15. (4) Employees can demonstrate proficiency in, and support of, all areas covered by training
 - (3) Facility committed to high quality employee hazard training, ensures all participate, regular updates
 - (2) Facility provides legally required training, makes effort to include all personnel
 - (1) Training is provided when need is apparent, experienced personnel assumed to know material

(0) Facility depends on experience and informal peer training to meet needs

B. Supervisors learn responsibilities, and underlying reasons

16. (4) All supervisors assist in worksite analysis, ensure physical protections, reinforce training, enforce discipline, and can explain work procedures, based on training provided to them
- (3) Most supervisors assist in worksite analysis, ensure physical protections, reinforce training, enforce discipline, and can explain work procedures, based on training provided to them
- (2) Supervisors have received basic training, appear to understand and demonstrate importance of worksite analysis, physical protections, training reinforcement, discipline, knowledge of procedures
- (1) Supervisors make reasonable effort to meet safety and health responsibilities; but have limited training
- (0) There is no formal effort to train supervisors in safety and health responsibilities